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Number 7

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Enclosed you find a computer (1) Sinclair 1600, (2) Sinclair 2400, (3) Sinclair 4800, (4) Sinclair 6400.

## Letter from the Editors

Well, this is it! With this issue of **SUM** we complete two full years of publishing this magazine in its present format. We were usually on time, and conclude this final issue only one month behind schedule. **SUM** as a magazine will be no more. However, we welcome the opportunity to continue to work with **Time Designs Magazine** and Tim Woods, its editor. Hopefully, by merging our efforts in this way, our favorite computers will be able to continue to receive the very finest support possible.

Just within the last month we became aware to the leaving of the market of another stalwart supporter, English Micro Connection due to Bob Dyl's health. We hope that all those companies who remain will receive the greatest support from us, the computer users. Without us, they cannot survive in this market. Already we see some having to turn to the Atari, Commodore, or IBM market to stay in business. At the same time, new products are still coming to market — games, business applications, graphics, utilities, hardware. Consider each carefully and buy as soon as possible if interested. We've all already paid for our machines long ago. Regular expenditures in new additions is a small price to pay for the "fun" and value of these products.

Our reprint of **The Best of SUM** is already in its second edition! It consists of 112 pages of articles from past issues of **SUM**. Going to press now is **The Best of SUM, Part II** with the best articles, programs, and construction projects from December, 1985 thru July, 1986 all in one volume — about 65 pages worth. Look for our ads in our sister publications for any other new products introduced by **SUM**.

Thank you, one and all, for your unqualified support and help in making this publishing venture the pleasure and success that it was!

Joe Williamson & Richard Cravy  
Editors and Publishers

# EPROM Programmer You Can Build, Part II

To use the EPROM programmer discussed last month with the TS 1000/1500, you need to use the program listed here. Because the 1000/1500 does not have IN or OUT, a couple of short machine code routines appear in the REM statement of line 1.

Memory location 16514 holds data to be outputted, and 16515 holds incoming data. 16521 is POKEd with the correct port to output from. The OUTPUT routine starts at 16516 and the INPUT routine starts at 16524.

Here is the machine code listing using decimal addresses:

```

16514                                ;data
16515                                ;data
16516 F5      push af                ;save registers
16517 3A8240  ld a,(16514)           ;ld data in reg.
16520 D3N?    out (N),a              a, out to port n
16522 F1      pop af                 ;restore reg's.
16523 C9      ret                    ;return to prog.
16524 F5      push af                ;
16525 DB00    in a,0                  ;in data from 0
16527 328340  ld (16515),a           ;port, ld data to
16530 F1      pop af                 16515
16531 C9      ret                    ;return to prog.

```

The first time you LOAD the program, use GOTO 270 to place the machine code in the REM statement in line 1. Then delete lines 270 onward and save this version.

The best use of this EPROM programmer is to have some type of memory board such as Hunter's Non-volatile memory board for the 1000/1500 which occupies the 8-16K area. You could even make some cartridges for the few TS 1510 cartridge players that exist.

The 1500 can auto-RUN programs stored on cartridge provided that memory location 8192d is set (=1) and starts executing at 8193. The 2068 has a much more involved way of setting up for cartridge use. The first eight bytes of the cartridge or EPROM contain information as to the type of program and where it is banked to and where the program starts. On power up, the computer checks these eight bytes and acts accordingly.

```

1 REM DD PRINT U"ANDPEEK" =LET
TAN PRINT <= M AND LET TAN
5 REM EPROM PROGRAMMER
10 REM READ EPROM
15 PRINT "ENTER 0 TO READ EPRO
M ENTER 1 TO WRITE TO
EPROM: "
16 INPUT TYPE
18 IF TYPE THEN GO TO 100
20 PRINT "ENTER START ADDRESS(
DEC)"
25 INPUT S
30 GO SUB 270
40 PRINT "ENTER LENGTH OF CODE
(DEC)"
45 INPUT LEN
50 FOR N=0 TO LEN-1
55 RANDOMIZE USR 16524
60 PRINT S+N,PEEK 16515
70 POKE 16521,S
75 RANDOMIZE USR 16516
80 NEXT N
90 GO TO 15
100 REM PROGRAMMING THE EPROM
115 PRINT "ENTER MEMORY START L
LOCATION(DEC)"
116 INPUT M
118 LET MV=M
120 PRINT "ENTER START ADDRESS(
DEC)"
125 INPUT S
130 GO SUB 270
140 PRINT "ENTER LENGTH OF CODE
(DEC)"
145 INPUT LEN
150 FOR N=0 TO LEN-1
155 POKE 16514,PEEK M
160 LET M=M+1
170 POKE 16521,4
172 RANDOMIZE USR 16516
175 PAUSE 4
180 POKE 16521,5
185 RANDOMIZE USR 16516
190 NEXT N
195 PRINT "PROGRAMMED"
200 REM VERIFY
205 GO TO 270
210 FOR N=0 TO LEN-1
230 LET D=PEEK MV
232 LET MV=MV+1
237 RANDOMIZE USR 16524
240 IF PEEK 16515<>D THEN PRINT
S+N
245 POKE 16521,5
247 RANDOMIZE USR 16516
250 NEXT N
260 PRINT "VERIFIED"
265 STOP
270 POKE 16521,2
272 POKE 16514,INT (S-255+INT (
S/255))
274 RANDOMIZE USR 16516
280 POKE 16521,3
285 POKE 16514,INT (S/255)
290 RANDOMIZE USR 16516
295 RETURN
300 LET A$="00000002450581300642
110032412012452190000050131054241
201"
301 LET M=16514
302 FOR N=1 TO 54 STEP 3
303 POKE M,VAL A$(N TO N+2)
304 LET M=M+1
305 NEXT N

```

The first byte tells the computer whether the program is in BASIC (01) or machine code (02). The second byte tells whether it is AROS (01) or LROS (02). The third and fourth tell where the starting address is. The fifth tells what "chunk" of memory the program resides in, the sixth tells whether it is auto start (01) or not. The seventh and eighth tells the number of variables being used plus 21.

The "chunk" byte can be in 8 or 16K blocks and set using the following codes:

Chunk	Addresses	Decimal code	
		8K	16K
0	0-8191	1	3
1	8192-16383	2	
2	16384-24575	4	12
3	24576-32767	8	
4	32768-40959	16	48
5	40960-49151	32	
6	49152-57343	64	192
7	57344-65535	128	

To see how this works, lets look at the first ten bytes in three of the most popular cartridge software: The Spectrum Emulator, OS-64, and Hot-Z.

	Spectrum Emulator	OS-64	Hot-Z
0	243	0	2
1	1	1	2
2	110	5	8
3	56	0	128
4	252	252	207
5	195	195	1
6	203	158	21
7	17	13	0
8	42	42	251
9	93	93	205

The Spectrum Emulator and OS-64 are both LROS type as designated by the 1 in the second byte and Hot-Z is an AROS type as designated by the 2. For LROS type, it does not matter what the first byte is, so for the emulator and OS-64, the numbers there are insignificant. The 2 in Hot-Z means that it is machine code.

The Spectrum emulator starts executing at  $256 \times 56 + 110 = 14446$  due to the numbers in the third and fourth byte. OS-64 starts at  $256 \times 0 + 5 = 5$ , and Hot-Z starts at  $256 \times 128 + 8 = 32776$ . From the fifth byte and the table above, we can see that Hot-Z is banked into the 32768-49151 region, and both OS-64 and the Spectrum emulator are in the 0-16383 region.

The rest of the bytes are not used at startup and can be used for part of the program for LROS, but for Hot-Z, which is AROS, we can see that it is set for auto-run by the 1 in the sixth byte.

For a BASIC program, the first byte should be 01, the second byte should be a two, and bytes 3 & 4 should be the start address of where the BASIC program begins. The sixth byte should be 01 for auto-RUN. It would be best to start an AROS program at 32768 as Hot-Z does to avoid any unwanted confrontations of the system variables which usually end around 26700.

Variables must be initialized in the BASIC program and DEF FN and FN do not work from cartridge. For more information on making and using cartridges, contact: Bob Orrfelt of GESSO Products, 3436 Bay Road, Redwood City, CA 94063.

The Technical Manual for the 2068 (sold by Time Designs Magazine) has some of the code for the 2068 home ROM to correct that obnoxious stop-before-delete bug, the INT-65535 bug and others. To make corrections to the home ROM, you need to copy the code up into memory so that you can make the changes. To stick with even numbers, start the code at 40,000 by first entering CLEAR 39999:NEW and then the following:

```
2000 FOR N=0 TO 16383: POKE N+40
000,PEEK N: NEXT N
```

Now the code is up where you can manipulate it. Make the following POKES to correct the listed bugs:

DELETE delay	INT-65536 etc. cont.
40849,1	43794,24
40850,1	43795,26
40851,0	43796,241
40852,11	43797,119
40853,121	43798,35
40854,176	43799,114
40855,32	43800,35
40856,251	43801,113
40857,241	43802,43
40858,24	43803,43
40859,210	43804,43
	43805,209
Optional turn on	43806,201
message: (Use code	43807,241
for each char.)	43808,43
44376 Good Day!	43809,54
44386 Revision 2.1	43810,145

44400 July 1986... 43811,35  
 add 128 to last 43812,54  
 character 43813,128  
 43814,60  
 INT-65536 etc. 43815,24  
 53297,245 43816,237  
 53298,60 43817,255  
 53299,179 43818,255  
 53300,178 43819,255  
 53301,194 43820,255  
 53302,228 43821,255  
 53303,53  
 53304,195  
 53305,239  
 53306,53

After you have made all the corrections you wish to make, use the program shown last time to program your EPROM. When the program asks for memory start location, enter 40000. Answer 0 to "Enter start address of ROM and 16384 for length of code question. The EPROM will take about 12 minutes to program and will verify afterwards. If all goes well, you will have your own personalized 2068 operating system when done.

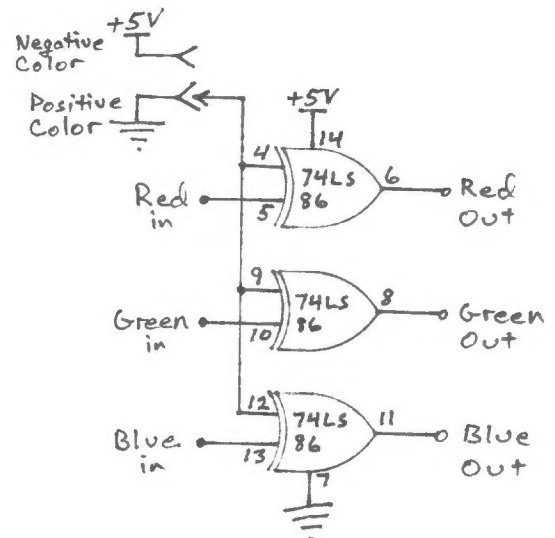
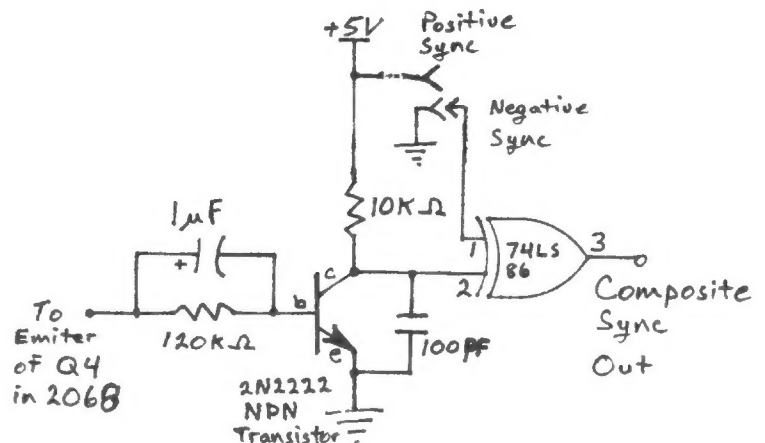
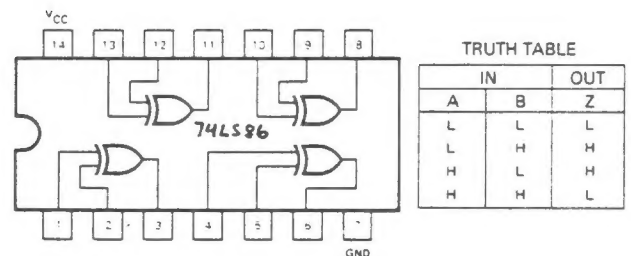
For those with QL's that have started to tinker around with your own hardware, you should find it fairly easy to convert this programmer to make your own EPROM based software cartridges for it as well.

The possibilities are endless with what you can do with the cartridge ports and this EPROM programmer. Enhanced operating systems, utilities, quick load programs with memory saving techniques are just a few of ideas. How about both an enhanced 2068 operating system and a Spectrum operating system all on one 32K EPROM?

One final note, after you program a few of these EPROMs, you may find that you will want to erase some. They require ultra-violet light for erasure, i.e., a special lamp is needed to erase them. The commercial erasers run on up into the hundreds of dollars. One eraser that I have found to be very cheap and effective is the DATARASE by Walling Co. available from R&D Electronic Supply, 100 E. Orange-thorpe Ave., Anaheim, CA 92801 (714) 773-0240. They take plastic and phone orders. Price was \$34.95 when I got mine and it will erase two EPROMs in about 8-10 mins.

Joe williamson

## Better RGB Circuit



The circuit described in the february 1986 issue of SUM was designed around the Sears RGB/TV/Monitor (same as the Sanyo model # 31C426) and the Magnavox (NAP) RGB-40 or 80.

Both of these monitors (and the QL monitor as well) take negative-going composite sync and active high RGB signals and have well buffered inputs to clean up any poor inputs.



Many RGB monitors out on the market don't have these features and therefore do not work very well or at all with the circuit described. With the simple addition of a 74LS86 Quad 2-input Exclusive OR gate, you can shape (buffer) and invert all four signals to what ever format you need by changing the polarity of one of the two input lines on each of the four gates.

Also, I neglected to say what transistor was used in the original circuit; it is a 2N2222, Radio Shack #276-2009. Although, any garden variety NPN transistor should work.

Joe Williamson

## MACHINE CODE TUTOR

### A review lost from June issue

Well, we pulled a fast one on you all last month. We were testing you and no-one wrote and said that we left out the second column in James Brezina's review of MACHINE CODE TUTOR!

Actually, it was a mistake on our part. Somewhere between pasting the issue up and printing it, the paste-up column fell off revealing part of May's article "Tape Makes a Difference" and obviously it does because this "tape" didn't stick!

Here is the column that is missing. We suggest that you take this page and copy it and cut out the missing column and use good tape and stick it in its proper place in last month's article. Our apologies go out to all of our readers and to Mr. Brezina for messing up his article.

### FOR SALE

Sinclair QL Computer with software, Delta 3-in-1 128K memory card with disk interface and parallel port, dual 3" disk drives and diskettes. All for \$550 plus shipping. Will consider offers or breaking up.

Microvitec RGB monitor for QL or 2068; includes cable. \$225 plus shipping. Panasonic RGB monitor and cable, \$175 plus shipping.

Richard Cravy — 904/378-9000 evenings

### The Missing Column:

line appears. From then on, you can use any key to step through the program. The action explained does not occur until you key to the next step, then the registers specified by the instruction show numbers. It is interesting to see how the Program Counter steps through the program, especially with calls and jumps. Here I encountered one of the things I find wrong with the program. As an example, a line will contain the following mnemonic: LD DE,8740. The DE pair at the bottom will show the number in that register pair and will show the HL register pair as containing 243 although that register pair has not been stepped to in the program. There is no explanation of this in the program.

After the ML program is completed, you are given the choice of RUNing it again, editing it, or returning to the menu. If you key enter, you are given the choice of loading another set of lessons or going to the assembler. Once you enter the assembler, you can no longer return to the lessons loaded in. The assembler can be entered directly from the first section without loading in any lessons. You can enter your own programs in the assembler.

You can enter a label of up to six characters or you can hit the space key and jump 7 spaces to where you can enter mnemonics and numbers. I only tried decimal numbers. There is a way to switch the display between decimal and hexadecimal. After entering a line, pressing ENTER advances you so you can enter the next line. After you have entered all the lines of your program, you key STOP and it will assemble your program and show the same screen as in the lesson examples. You can then run the program in the same way as the lesson's examples.

There are a number of things that I don't like about this program. In a program entered through other assemblers, you can specify addresses for jumps or offsets for relative jumps. In this one you cannot. You must label lines to be jumped to and use that label in the jump. You are limited to only 15 lines for the program. You are limited to addresses 16384 to 23295 and 32000 to 32192 for your

# — SOUNDER —

## Using SOUND on the 2068

### A COMMENT

When writing an article I always try to do something which will encourage others to try their hand at learning to program for themselves. While SOUNDER is a working program, it is open to improvement and I hope some of you will do just that. You may want to allow for larger files, add new routines, or anything that you think will make it better. How about adding a Catalog file?

### SOME PARTICULARS

The program starts out by going to a subroutine which draws the Logo for the opening screen at line 580. After this it draws the working screen at line 25. Then comes the routine for adding the screen commands at line 95.

Next comes the main part of the program starting at line 145. Here we have a part of the program which keeps track of the command keys that are pressed by the User. If for example the User presses the "8" key, a jump is made to a Subroutine which keeps track of seeing if the key is still pressed and starts the amount (Amt) going upward in value. If the key is released, then the program is RETURNed to where it came from. The same thing happens in reverse for the countdown routine.

All other routines are sensed from the keyboard in the same manner as the above. It is which key has been pressed that determines which sub-routine the program goes to. These Subs are labeled according to their function. For example: GOSUB tape makes the program do the TAPE routine at line 350.

Use the 8 & 5 keys to change the value of each register for the particular sound you wish to make. Press six to move to the next register and then follow the menu at the bottom of the screen to sound off, Retain, or SAVE the values.

### THE MEMORY

The memory which is used to store the values for the Registers is broken into two parts; one holds the register numbers (at 59000), and the other saves the values which go into the registers (at 60000). These locations were picked because they are high in memory. Why are they split into two groups? I felt it was easier from a programming view to do so. It allows one variable to count for both locations rather than having them at one location and having to alternate the values.

### TAPE IT

Once the TAPE option has been chosen, the two memory locations which hold the data for the sound program(s) is altered and put into one location for ease of handling to tape. The two locations are PEEKED and then stored in location 58000. The data is saved in alternate fashion; first the register number and then a value of that given register.

### GET A SOUND

When a request for a sound is made from the keyboard, a prompt asks for either ALL or LAST entry. Here is an area which may be altered to suit your needs. The routine begins at line 270. Either choice is routed to the proper routine. One will allow only the last 13 entries to be called up. The other will call all the memory up to a given limit which you may set. Default is 20 complete register pairs (13\*20).

### WHY DIDN'T I?

Why didn't I make it more elaborate? The first thing a program should be is User friendly. It should not burden the User with too many commands which are hard to remember. The more the program grows (as a rule), the harder it gets to use easily. Number two, it was left this way with hopes that some of you would tailor it to your liking. Have I changed it much since the beginning? You bet! All ideas may be improved upon with enough thinking!

### SOME THOUGHTS

How about sound routines that may be entered into a question and answer type program which would produce some wierd noises for the wrong or right answers?

Looking for that "spacey" sound? Try some of the basic sounds given in your manual and go from there. Have you tried imitating a cricket? How about a frog? Sounds are of unlimited supply, it's up to you.

## ATTACK AND FALL

Well ok, it's decay, not fall. Sounds which you hear every day are produced with these two terms. Attack is simply how fast a sound reaches its maximum peak level. Decay is how long it takes it to drop back off. Now as for the cricket, it has (I think) about an even attack and decay range. That gives us approximately a SAWTOOTH wave form. See page 193 of your manual: Fig 10. Now if the sound were very fast in rising (attack) and slower in falling off (decay), then fig 8 would fill the bill.

## AND THERE

You have it. These are some basic ideas to help you in getting started. The rest is up to you. Try it out and have some fun.

Andy Centek  
Garden City, MI

```

5 REM sound Routine-Enters so
und from keyboard
10 GO SUB 580
15 GO SUB 550: REM setup Vars
20 REM PRINT LOGO SCREEN
35 REM END SCREEN
30 PRINT AT P,0;" "; LET P=P+1
35 IF P=22 THEN GO TO 45
40 GO TO 30
45 LET P=1
50 PRINT AT 21,P;" "; LET P=P+
1: IF P=31 THEN GO TO 60
55 GO TO 50
60 LET P=21
65 PRINT AT P,31;" "; LET P=P-
1: IF P=-1 THEN GO TO 75
70 GO TO 65
75 LET P=30
80 PRINT AT 0,P;" "; LET P=P-1
: IF P=0 THEN GO TO 90
85 GO TO 80
90 REM PRINT SCREEN DATA
95 PRINT AT 0,1;" REGISTERS ";
AT 0,12;" VALUES ";AT 0,20;" RUN
CTIONS "
100 PRINT AT 2,5;"0";AT 2,21;"F
ine Tune";AT 3,5;"1";AT 3,21;"C-
Tune"
105 PRINT AT 4,5;"2";AT 4,21;"F
ine Tune";AT 5,5;"3";AT 5,21;"C-
Tune"
110 PRINT AT 6,5;"4";AT 6,21;"F
ine Tune";AT 7,5;"5";AT 7,21;"C-
Tune";AT 8,5;"6";AT 8,21;"Noise"

```

```

115 PRINT AT 9,5;"7";AT 9,21;"E
nable";AT 10,5;"8";AT 10,21;"AMP
litude";AT 11,5;"9";AT 11,21;"Am
plitude"
120 PRINT AT 12,5;"10";AT 12,21
;"16 Enables";AT 13,5;"11";AT 13
,21;"AT-Time"
125 PRINT AT 14,5;"12";AT 14,21
;"CT-Tune";AT 15,5;"13";AT 15,21
;"Shape"
130 PLOT 5,40: DRAW 245,0
135 PRINT AT 16,2;" RES-13";AT
17,2;"S-HOLD";AT 18,2;"S-SOUND";AT 18
,2;"S-ALTERNATE";AT 19,2
;"S-ATTACK";AT 20,2;"S-RETAIN"
;"S-RETAIN"
140 PRINT AT 20,14;"S-TAPE ";AT
17,23;AT 18,23;"S-VALS";AT 19,2
6;"TO";AT 20,24;"SCREEN"
145 LET A$=INKEY$: REM GET CURS
OR KEY
150 PRINT AT R,15;" "; IF R>2 T
HEN PRINT AT R-1,15;" "
155 IF A$="6" THEN GO SUB CURSO
R
160 IF A$="5" OR A$="s" THEN GO
TO 275
165 IF A$="D" OR A$="d" THEN GO
TO 320
170 IF A$="E" OR A$="e" THEN GO
SUB ERASE
175 IF A$="N" OR A$="n" THEN GO
SUB NOISE
180 IF A$="T" OR A$="t" THEN GO
SUB TAPE
185 IF A$="R" OR A$="r" THEN GO
SUB SAVE
195 IF A$="8" THEN GO SUB CUP
200 IF A$="5" AND AMT>0 THEN GO
SUB DOWN
205 GO TO 145
210 REM MOVE CURSOR
215 LET R=R+1
220 IF R=16 THEN PRINT AT 16,14
;" ";AT 16,12;" ";AT 15,15;" ";
LET R=2: PLOT 95,40: DRAW 30,0
225 RETURN
230 REM GET UP COUNT REG VALS
235 LET AMT=AMT+1
240 IF R=2 OR R=4 OR R=6 OR R=1
3 OR R=14 THEN PRINT AT R,12;AMT
: IF AMT>255 THEN LET AMT=0: PRI
NT AT R,12;" "
245 IF R=3 OR R=5 OR R=7 OR R=1
0 OR R=11 OR R=12 OR R=15 THEN P
RINT AT R,12;AMT: IF AMT>15 THEN
LET AMT=0: PRINT AT R,13;" "
250 IF R=9 THEN PRINT AT R,12;A
MT: IF AMT=64 THEN LET AMT=0: PR
INT AT R,11;" "
255 IF R=8 THEN PRINT AT R,12;A
MT: IF AMT=32 THEN LET AMT=0: PR
INT AT R,11;" "
260 IF A$="R" OR A$="r" THEN BE
EP .1,.05: GO SUB SAVE
265 RETURN
270 REM SOUND ROUTINE
275 CLS: INPUT "LAST sound or
ALL sounds in Memory L/A ?";Q$:
IF Q$="L" THEN GO TO 500
280 PRINT AT 8,5;"YOUR SOUND IS
--"; LET T=0: LET MEM1=59000: L
ET MEM2=60000: PAUSE 30
285 SOUND PEEK MEM1,PEEK MEM2:
LET MEM1=MEM1+1: LET MEM2=MEM2+1
: IF T=13 THEN GO TO 295
290 LET T=T+1: GO TO 285
295 PRINT AT 10,5;"PRESS ANY KE
Y TO QUIT."; PAUSE 0: FOR N=0 TO
13: SOUND N,0: NEXT N: CLS: GO
TO 25

```



```

300 REM SET GIVEN SOUNDS
305 INPUT "WHICH SOUND GROUP (1-20) ?";GRP: REM MAY BE CHANGED TO ANY # OF GROUPS UP TO MEMORY LIMIT.LINE 929 & 840.
310 GO TO 500
315 REM VALUES TO SCREEN
320 CLS : LET C=1: LET A$=INKEY$: LET MEM1=59000: LET MEM2=60000: LET T=0
325 PRINT AT 0,0;"REGISTER #/s" : AT 0,15;"VALUES":AT 0,23;"q-Quit"
330 PRINT PEEK MEM1,PEEK MEM2
335 LET MEM1=MEM1+1: LET MEM2=MEM2+1: LET T=T+1: IF T=13 THEN LET T=0: GO TO 345
340 GO TO 330
345 PRINT AT 20,0: BRIGHT 1;C: BRIGHT 0;" -GROUP OF 14 REGISTER S. ANY KEY CONTINUES." : PAUSE 0: LET C=C+1: FOR N=1 TO 14 : PRINT AT N,0;" " : AT N,15;" " : LET A$=INKEY$: IF A$="q" OR A$="0" THEN CLS : GO TO 15
346 NEXT N: CLS : GO TO 325
350 REM TAPE ROUTINE
355 CLS : PRINT AT 2,0;"THIS ROUTINE WILL CALL ALL SOUND VALUES FROM MEMORY TO TAPE.WHEN RE-LOADED THE REGISTER WILL BE THE FIRST# AND THE VALUE THE 2ND.# . ALTERNATED ORDER."
360 PRINT FLASH 1:AT 12,4;"MEMORY BEING READED --"
365 LET P1=59000: LET P2=60000: LET P3=58000
370 POKE P3,PEEK P1: LET P1=P1+1: POKE P3,PEEK P2: LET P2=P2+1: LET P3=P3+1: IF P3=58360 THEN GO TO 380
375 GO TO 370
380 FLASH 0: CLS : SAVE "REGVALS"CODE 58000,360
385 STOP
390 REM ERASE ROUTINE
395 BEEP .2,.05
400 INPUT AT 2,6;"ARE YOU SURE Y/N ";Q$: IF Q$="N" OR Q$="n" THEN GO TO 25
405 LET mem1=59000: LET mem2=60000
410 PRINT AT 2,8;"ERASING"
415 POKE MEM1,0: POKE MEM2,0: LET MEM1=MEM1+1: LET MEM2=MEM2+1: IF MEM1=59280 THEN GO TO 425
420 GO TO 415
425 PRINT AT 15,12;"ERASED": BE EP .5,.1: PAUSE 50: CLS : GO TO 15
430 GO TO 15
435 REM SAVE DATA TO MEMORY
440 POKE MEM1,R-2: POKE MEM2,AM T
445 BEEP .05,.1: PRINT AT 1,8;"DATA SAVED": PAUSE 70: PRINT AT 1,8;" " : LET MEM1=MEM1+1: LET MEM2=MEM2+1
450 IF MEM1=59280 THEN GO TO 460
455 RETURN
460 CLS : PRINT AT 10,5;"MEMORY FULL." : STOP
465 REM COUNT DOWN AMT
470 LET AMT=AMT-1
475 LET A$=INKEY$: IF A$<>"5" THEN RETURN
480 IF AMT<100 THEN PRINT AT R,14;" " : AT R,12;AMT
485 IF AMT<10 THEN PRINT AT R,13;" " : AT R,12;AMT

```

```

490 IF AMT=0 THEN LET AMT=0: PRINT AT R,13;" " : RETURN
495 GO TO 470
500 REM SET A GROUP
505 INPUT "WHICH GROUP (1-20) ?";GRP
510 LET MEM1=59000: LET MEM2=60000
515 IF GRP=1 THEN GO TO 280
520 LET MEM1=MEM1+(14*GRP): LET MEM2=MEM2+(14*GRP)
525 PRINT AT 5,5;"THAT SOUND IS --": GO TO 285
530 LET MEM1=59000: LET MEM2=60000: LET T=0
535 SOUND PEEK MEM1,PEEK MEM2: IF T=13 THEN GO TO 295
540 GO TO 535
545 REM VARIABLES
550 LET TAPE=365: LET ERASE=395 : LET RETAIN=440: LET GET=305 : LET DATA=235
560 LET AMT=0: LET CURSOR=215: LET CUP=235: LET DOWN=470
565 LET n=1: LET r=2: LET c=0: LET P=1: LET A=1: DIM a(14): DIM u(14)
570 LET MEM1=59000: LET MEM2=60000: LET SAVE=440: LET D=1
575 RETURN
580 REM DRAW 5000 SCREEN
585 LET E=175: LET C=255
590 PLOT 0,E: DRAW 0,0: LET E=E-1
595 IF E=145 THEN GO TO 605
600 GO TO 590
605 LET C=20
610 PLOT 0,E: DRAW 0,0: LET E=E-1: IF E=125 THEN GO TO 620
615 GO TO 610
620 LET C=20
625 PLOT 0,E: DRAW 0,0: DRAW 0,0: LET E=E-1: IF E=110 THEN GO TO 635
630 GO TO 625
635 LET C=20
640 PLOT 0,E: DRAW 0,0: LET E=E-1: IF E=95 THEN GO TO 650
645 GO TO 640
650 LET C=50
655 PLOT 0,E: DRAW 0,0: DRAW 0,35: DRAW -20,0: DRAW 0,9: DRAW 40,0
660 LET E=138: LET C=225
665 PLOT 30,E: DRAW 0,0: LET E=E-1: IF E=130 THEN GO TO 675
670 GO TO 665
675 PLOT 70,95: DRAW 0,30: DRAW 30,0: DRAW 0,-30: DRAW -30,0
680 PLOT 160,95: DRAW 0,30: DRAW 5,0: DRAW 30,-30: DRAW 5,0: DRAW 0,30: DRAW -5,0: DRAW 0,-20: DRAW -30,20: DRAW -5,0
685 PLOT 75,100: DRAW 0,20: DRAW 20,0: DRAW 0,-20: DRAW -20,0
690 PLOT 160,95: DRAW 0,30: DRAW 5,0: DRAW 30,-30: DRAW 5,0: DRAW 0,30: DRAW -5,0: DRAW 0,-20: DRAW -30,20: DRAW -5,0
695 PLOT 110,95: DRAW 0,30: DRAW 5,0: DRAW 0,-25: DRAW 20,0: DRAW 0,25: DRAW 5,0: DRAW 0,-30: DRAW -30,0
700 PLOT 160,95: DRAW 5,0: DRAW 0,30: PLOT 220,95: DRAW 0,30: DRAW 20,0: DRAW 5,-5: DRAW 0,-20: DRAW -5,-5: DRAW -20,0
705 PLOT 225,100: DRAW 0,20: DRAW 10,0: DRAW 5,-5: DRAW 0,-10: DRAW -5,-5: DRAW -10,0

```

```

710 LET T=250
715 PLOT T,130: DRAW 0,-40: LE
T T=T+1: IF T=255 THEN GO TO 725
720 GO TO 715
725 LET K=90
730 PLOT 255,K: DRAW -255,0: LE
T K=K-1: IF K=85 THEN GO TO 740
735 GO TO 730
740 LET E=90
745 PLOT 0,E: DRAW 50,0: LET E=
E-1: IF E=0 THEN GO TO 755
750 GO TO 745
755 PLOT 70,70: DRAW 0,-40: DRA
W 40,0: DRAW 0,40: DRAW -40,0
760 PLOT 60,75: DRAW 40,0: DRAW
10,-5: DRAW -40,0: DRAW -10,5:
DRAW 0,-40: DRAW 10,-5
765 PLOT 75,65: DRAW 25,0: DRAW
0,-25: DRAW -25,0: DRAW 0,25: P
LOT 120,60: DRAW 25,0: DRAW 5,-5
: DRAW -20,0: DRAW 0,-10: DRAW 1
0,0: DRAW 5,-5: DRAW -10,0: DRAW
0,-10: DRAW -15,0: DRAW 0,30
770 PLOT 167,60: DRAW 25,0: DRA
W 5,-5: DRAW -20,0: DRAW 0,-10:
DRAW 10,0: DRAW 5,-5: DRAW -10,0
: DRAW 0,-10: DRAW -15,0: DRAW 0
,30
775 LET E=65
780 PLOT 75,E: DRAW 25,0: LET E
=E-1: IF E=40 THEN GO TO 790
785 GO TO 780
790 LET E=20
795 PLOT 50,E: DRAW 205,0: LET
E=E-1: IF E=0 THEN GO TO 805
800 GO TO 795
805 LET E=225
810 PLOT E,20: DRAW 0,70: LET E
=E+1: IF E=255 THEN GO TO 820
815 GO TO 810
820 LET E=225
825 PLOT E,20: DRAW 0,70: LET E
=E+1: IF E=255 THEN GO TO 845
830 GO TO 835
835 PRINT AT 20,15;"BY:"
840 LET Z=1
845 LET K=INT (RND*7): LET Z=Z+
1: IF Z=30 THEN GO TO 855
850 BEEP .02,K: GO TO 845
855 PRINT AT 20,15;"Andy Centek
": PAUSE 300: CLS : RETURN
860 PRINT AT 20,15;"Andy Centek
": PAUSE 300: CLS : RETURN

```

## Classifieds

**WANTED:** Info to get a sick ZX80 up and going. No cursor, just garbage on the screen. Kit manual might help. Donald S. Lambert, 3310 Clover Dr. SW, Cedar Rapids, IA 52404. (319) 364-4330 after 4PM CDT.

**FOR SALE:** TS 2068, \$100. Two TS 1500, \$135. Two TS 2020 recorders, \$50. Will sell separately. All w/cables and power supply. Call (315) 769-2974 11AM-2PM or after 6PM.

## Vendor Reports

E-Z KEY has just released a new program for the QL called DUMP which allows you to make a hard-copy of the QL screen on your Epson compatible printer from SuperBASIC. \$24.95. E-Z Key, Suite 75, 711 Southern Artery, Quincy, MA 02169.

Curry Computer now has the following Spectrum programs: Delta Wing, Chiller, The Comet Game, Molecule Man, 1 Man & His Droid, Skyranger, Planets, and Back to Skool. Prices range from \$9.95 to \$18.95. Curry Computer, PO Box 5607, Glendale, AZ 85312-5607 (602) 978-2902.

## Inventory Program for 2068

I tried to make this an user-friendly program. If the program is interrupted, it should be restarted with GOTO 50.

At some places in the program, if there is an error and the program does not return to the menu, data can be lost to the user. It is still there but the counter "A" will be set at the wrong number. It is recommended that this option be disabled by adding a REM statement after 55 while working on the program, but remember to remove it once all your changes have been made. To enter your own name and title, change line 190 and 215.

The main menu has eight options, which may be selected by pressing the appropriate number.

Option 1 starts a new inventory and will erase all previous files. However, if the selection is made by mistake, the program will stop with a flashing warning and may only be continued by pressing "C". Any other key will return to the main menu. The arrays are dimensioned here and place limits on data to be entered. 500 items may be entered. Their names can be up to 16 characters in length. all lengths include spaces. The price is limited to 6 places. That's \$999.99 for each item. Item count is limited to 99999 and minimum count is limited to 9999. Commas should

not be used since this will shorten the allowable space.

Option 2 is used to add items to the file. Prompts are used at each step. When the date is asked for, enter two digits for the month, day, and year. January 8, 1986 would be entered 010886. It will appear in the program as 01/08/86.

Option 3 allows changing any item status. Such as item name, quantity, price, minimum stock level, vendor, or date ordered. If a 0 is entered instead of the date, that item will not show up when minimum stock level is asked for. A good way to not reorder an obsolete item. Selection of an item is done by item number and not by item name.

Option 4 will search for an item by name. the program prints the file numbers as it runs through looking for a match. This makes the program a little slower, but is well worth the time, since it lets you see that it is working and where its at.

Option 5 allows looking at each item in inventory. This option may be terminated at any time and returns to the main menu.

Option 6 will delete the item number you selected and move the other files down one position to fill the void left by the deleted file. Here again you can watch the files move. The program does not have to run to 500, the limit of the file space.

Option 7 will check stock to see if any item is at or below minimum stock level. Any item found is printed on the screen showing the item number, name, stock level and minimum stock level.

Option 8 allows the user to save the program or stop without returning to line 50.

A final word. When changing the program, disable the ON ERR at line 50 until you are sure the program is working correctly, otherwise the program could lock up requiring you to turn off the computer and start over.

For a master copy, enter CLEAR before saving to tape. Don't CLEAR when data is to be saved. When the master copy is

loaded, you must use option 1 to set the arrays before any data can be entered. Don't forget, option 1 will wipe out all data in a loaded program.

Enter the program and RUN for the first time only. Running after data entry will erase all data. Here is a breakdown of program operation:

Line 10, X\$ contains stars for accentuating the program and is printed when called for.

Line 50 sets key "click" and puts computer in CAPS lock.

Line 55 stops loss of data in case a wrong entry is made.

Lines 60 to 240 comprises the initial menu.

Line 250 takes the value of A\$ and multiplies this number by 1000, sending the program to the selected menu item.

Lines 270 to 320 is the print subroutine to print files selected.

Line 1000 clears the screen and 1001 flashes the warning that all prior data will be lost if you continue. Any key except "C" will return you to the menu.

Lines 1010 to 1060 dimension string arrays to hold 500 items and related information.

Lines 1070 to 1340 allow you to load the program with your inventory items.

Lines 1110 and 1165 allow escaping from the loading routine back to the main menu.

Lines 1350 to 1380 notify you when the files are full and return you to the menu.

Line 2000 directs the program back to the inventory loading routine to add additional items.

Line 3000 sets a flag since the following routine is used in two parts of the program and the value of "Z" determines where the program is directed. Line 3000 sets Z to 1 and any return to line 50 resets Z to 0 at line 75.

Line 3010 to 3260 allow changing the data concerning the item selected.

Line 3265 returns to the main menu.

Lines 3270 to 3350 are used in other sections of the program.

Lines 4000 to 4200 search for an item by name.

Line 4100 sets S\$ to A (number of items in inventory) with a length determined by the length of the named item.

Line 4140 sends the program to line 4210 for print out when the matching name is found. If no match found, the program returns to line 4120 to continue the search. If no match is found by the time N runs out, line 4160 informs you that the item was not found and asks to try another or return to the menu.

Lines 5000 to 5210 cycle through the inventory an item at a time.

Lines 6000 to 6240 delete an item from the file and drop each item back one to fill the void.

Lines 7000 to 7170 runs through the inventory to pick out items that are at or below minimum stock level. 7180 returns to the menu.

Line 8000 disables the command to go to 50 on an error. This is selected any time a save routine is selected and is the only way to stop the program.

Lines 8010 to 8060 contain the save routine. Enjoy!

Thornton E. Benson

```

10 LET X$="*****"
20 PRINT X$
30 PRINT "1-START A NEW INVENTORY"
40 PRINT "2-ADD A NEW ITEM"
50 PRINT "3-CHANGE ITEM STATUS"
60 PRINT "4-SEARCH FOR AN ITEM"
70 PRINT "5-CHECK INVENTORY"
80 PRINT "6-DELETE AN ITEM"
90 PRINT "7-CHECK FOR MINIMUM STOCK LEVELS"
100 PRINT "8-END OR SAVE"
110 PRINT ""
120 PRINT X$
130 PRINT AT 17,7;"THORNTON E. BENSON"
140 PRINT ""
150 PRINT X$
160 PRINT AT 21,8;"DECEMBER 3, 1983"
170 IF INKEY$="" THEN GO TO 220
180 LET A$=INKEY$
190 IF INKEY$("<") THEN GO TO 23
200 IF A$("<1" OR A$(">8") THEN GO TO 50
210 GO TO VAL A$*1000
220 CLS
230 FLASH 1: PRINT AT 10,1;"ALL PRIOR DATA WILL BE DELETED"; FL
240 PRINT AT 12,0;"TO CONTINUE PRESS ""C"", ANY OTHER TAB 3)"
250 IF INKEY$="" THEN GO TO 100
260 IF INKEY$("<")"C" THEN GO TO 5
270 CLS
280 DIM I$(500,16)
290 DIM V$(500,16)
300 DIM D$(500,8)
310 DIM P$(500,8)
320 DIM C$(500,6)
330 DIM M$(500,4)
340 LET A=1
350 FOR A=A TO 500
360 CLS
370 PRINT X$
380 PRINT AT 2,6;"NEW INVENTORY"
390 PRINT AT 4,2;"TO ESCAPE ENTER ""0"" FOR ITEM."
400 PRINT
410 PRINT X$
420 PRINT AT 9,0;"ITEM :A"
430 INPUT B$
440 PRINT B$
450 IF B$="" THEN GO TO 50
460 LET I$(A)=B$
470 PRINT "HOW MANY?"
480 INPUT C$(A)
490 PRINT C$(A)
500 PRINT "PRICE?";"#"
510 INPUT P$(A)
520 PRINT P$(A)
530 PRINT "MIN. STOCK?"
540 INPUT M$(A)
550 PRINT M$(A)
560 PRINT "VENDOR?"
570 INPUT V$(A)
580 PRINT V$(A)
590 PRINT "DATE ORDERED?"
600 DIM W$(1,8)
610 INPUT W$(1)
620 LET D$(A, TO 2)=W$(1, TO 2)
630 LET D$(A,3)="/"
640 LET D$(A,4 TO 5)=W$(1,3 TO 4)
650 LET D$(A,6)="/"
660 LET D$(A,7 TO 8)=W$(1,5 TO 6)
670 PRINT D$(A)
680 PAUSE 80
690 NEXT A
700 CLS
710 PRINT AT 10,10;"FILE FULL"

```

```

150 PRINT "6-DELETE AN ITEM"
160 PRINT "7-CHECK FOR MINIMUM STOCK LEVELS"
165 PRINT "8-END OR SAVE"
170 PRINT ""
180 PRINT X$
190 PRINT AT 17,7;"THORNTON E. BENSON"
200 PRINT ""
210 PRINT X$
215 PRINT AT 21,8;"DECEMBER 3, 1983"
220 IF INKEY$="" THEN GO TO 220
230 LET A$=INKEY$
235 IF INKEY$("<") THEN GO TO 23
240 IF A$("<1" OR A$(">8") THEN GO TO 50
250 GO TO VAL A$*1000
260 CLS
2601 FLASH 1: PRINT AT 10,1;"ALL PRIOR DATA WILL BE DELETED"; FL
2602 PRINT AT 12,0;"TO CONTINUE PRESS ""C"", ANY OTHER TAB 3)"
2603 IF INKEY$="" THEN GO TO 100
2604 IF INKEY$("<")"C" THEN GO TO 5
2605 CLS
2610 DIM I$(500,16)
2620 DIM V$(500,16)
2630 DIM D$(500,8)
2640 DIM P$(500,8)
2650 DIM C$(500,6)
2660 DIM M$(500,4)
2670 LET A=1
2680 FOR A=A TO 500
2685 CLS
2690 PRINT X$
2695 PRINT AT 2,6;"NEW INVENTORY"
2700 PRINT AT 4,2;"TO ESCAPE ENTER ""0"" FOR ITEM."
2710 PRINT
2720 PRINT X$
2730 PRINT AT 9,0;"ITEM :A"
2740 INPUT B$
2750 PRINT B$
2760 IF B$="" THEN GO TO 50
2770 LET I$(A)=B$
2780 PRINT "HOW MANY?"
2790 INPUT C$(A)
2800 PRINT C$(A)
2810 PRINT "PRICE?";"#"
2820 INPUT P$(A)
2830 PRINT P$(A)
2840 PRINT "MIN. STOCK?"
2850 INPUT M$(A)
2860 PRINT M$(A)
2870 PRINT "VENDOR?"
2880 INPUT V$(A)
2890 PRINT V$(A)
2900 PRINT "DATE ORDERED?"
2910 DIM W$(1,8)
2920 INPUT W$(1)
2930 LET D$(A, TO 2)=W$(1, TO 2)
2940 LET D$(A,3)="/"
2950 LET D$(A,4 TO 5)=W$(1,3 TO 4)
2960 LET D$(A,6)="/"
2970 LET D$(A,7 TO 8)=W$(1,5 TO 6)
2980 PRINT D$(A)
2990 PAUSE 80
3000 NEXT A
3010 CLS
3020 PRINT AT 10,10;"FILE FULL"

```

```

1360 PRINT AT 12,0;"TO RETURN TO
MENU TOUCH ANY KEY"
1370 IF INKEY$="" THEN GO TO 137
0
1380 GO TO 50
2000 GO TO 1000
3000 CLS
3010 PRINT X$
3020 PRINT AT 2,7;"CHANGE ITEM S
TATUS"
3030 PRINT ""
3040 PRINT X$
3050 PRINT AT 6,3;"SELECT ITEM B
Y ITEM NUMBER"
3060 PRINT AT 8,0;"0-ITEM ",
3070 INPUT B
3075 LET X=A
3077 IF A<=8 THEN GO TO 5160
3080 LET A=B
3090 PRINT A;TAB 15;I$(A)
3100 PRINT "1-QUANTITY";TAB 15;C$
(A)
3110 PRINT "2-PRICE";TAB 15;P$(A
)
3120 PRINT "3-MIN. STOCK";TAB 15
;M$(A)
3130 PRINT "4-VENDER";TAB 15;V$(
A)
3140 PRINT "5-DATE ORDERED";TAB
15;D$(A)
3145 PRINT : PRINT "6-RETURN TO
MENU"
3147 PRINT AT 17,3;"SELECT CHANG
E BY NUMBER"
3150 IF INKEY$="" THEN GO TO 315
0
3160 LET A$=INKEY$
3162 IF INKEY$<>"" THEN GO TO 31
62
3165 PRINT AT 19,8;"ENTER CHANGE
"
3167 IF A$="0" THEN INPUT I$(A)
3168 PRINT AT 8,15;I$(A)
3170 IF A$="1" THEN INPUT C$(A)
3180 PRINT AT 9,15;C$(A)
3190 IF A$="2" THEN INPUT P$(A)
3200 PRINT AT 10,15;P$(A)
3210 IF A$="3" THEN INPUT M$(A)
3220 PRINT AT 11,15;M$(A)
3230 IF A$="4" THEN INPUT V$(A)
3240 PRINT AT 12,15;V$(A)
3250 IF A$="5" THEN DIM U$(1,6)
3251 IF A$="5" THEN INPUT U$(1)
3252 IF A$="5" THEN LET D$(A, TO
2)=U$(1, TO 2)
3253 IF A$="5" THEN LET D$(A,3)=
"/"
3254 IF A$="5" THEN LET D$(A,4 T
O 5)=U$(1,3 TO 4)
3255 IF A$="5" THEN LET D$(A,6)=
"/"
3256 IF A$="5" THEN LET D$(A,7 T
O 8)=U$(1,5 TO 6)
3260 PRINT AT 13,15;D$(A)
3270 IF A$="5" THEN LET A=X: GO
TO 50
3280 PRINT AT 19,2;"ANY OTHER CH
ANGES? Y OR N"
3285 LET A=X
3290 IF INKEY$="" THEN GO TO 329
0
3300 IF INKEY$="Y" THEN GO TO 33
20
3310 IF INKEY$="N" THEN LET A=X:
GO TO 50
3320 CLS
3325 IF INKEY$<>"" THEN GO TO 33
25
3330 PRINT AT 8,0;"0-ITEM ",
3340 LET A=B

```

```

3350 GO TO 3090
4000 CLS
4005 IF INKEY$<>"" THEN GO TO 40
05
4010 PRINT X$
4020 PRINT AT 2,7;"SEARCH FOR AN
ITEM"
4030 PRINT ""
4040 PRINT X$
4050 PRINT AT 6,7;"ENTER NAME OF
ITEM"
4060 PRINT AT 8,0;"ITEM",
4070 INPUT B$
4075 IF INKEY$<>"" THEN GO TO 40
75
4080 PRINT B$
4090 FLASH 1: PRINT AT 4,7;"COMP
UTER SEARCHING": FLASH 0
4100 LET B=LEN B$
4110 DIM S$(A,B)
4120 FOR N=1 TO A
4125 IF N=A THEN GO TO 4160
4130 LET S$(N)=I$(N)
4135 PRINT AT 8,5;N
4140 IF B$=S$(N) THEN GO TO 4210
4150 NEXT N
4160 CLS : PRINT AT 10,0;"NO ";B
$;" FOUND"
4170 PRINT AT 12,0;"TO SEARCH FO
R ANOTHER ITEM TOUCHANY KEY, TO
RETURN TO MENU TOUCH""TAB 12;""
""R""
4180 IF INKEY$="" THEN GO TO 418
0
4190 IF INKEY$<>"R" THEN GO TO 4
000
4200 GO TO 50
4210 CLS : PRINT AT 4,0;X$;AT 8,
0;"ITEM ";N;AT 8,15;I$(N)
4220 PRINT AT 10,0;"QUANTITY",C$(
N)
4230 PRINT "PRICE",P$(N)
4240 PRINT "MINIMUM STOCK",M$(N)
4250 PRINT "VENDER",V$(N)
4260 PRINT "DATE ORDERED",D$(N)
4270 PRINT
4280 PRINT "TO SEARCH FOR ANOTHE
R ITEM PRESSANY KEY.""R"" TO R
ETURN TO MENU PRESS ""R""
4290 IF INKEY$="" THEN GO TO 429
0
4300 IF INKEY$<>"R" THEN GO TO 4
000
4310 GO TO 50
5000 CLS
5010 PRINT X$
5020 PRINT AT 2,8;"CHECK INVENTO
RY"
5030 PRINT ""
5040 PRINT X$
5050 FOR B=1 TO A
5055 IF B=A THEN GO TO 5160
5060 PRINT AT 6,0;"ITEM ";B,I$(B
)
5070 PRINT "QUANTITY",C$(B)
5080 PRINT "PRICE",P$(B)
5090 PRINT "MINIMUM STOCK",M$(B)
5100 PRINT "VENDER",V$(B)
5110 PRINT "ORDER DATE",D$(B)
5120 PRINT AT 13,2;"TOUCH ANY KE
Y TO CONTINUE.",TAB 3;"TO REGAIN
MENU TOUCH ""R""
5130 IF INKEY$="" THEN GO TO 513
0
5140 IF INKEY$<>"R" THEN GO TO 5
200
5150 GO TO 50
5160 PRINT AT 10,9;"END OF FILE"
: PAUSE 30

```



```

5165 PRINT AT 12,0;"TOUCH ANY KE
Y TO RETURN TO MENU"
5180 IF INKEY$="" THEN GO TO 518
0
5190 GO TO 50
5200 CLS
5210 NEXT B
6000 IF INKEY$("<") THEN GO TO 60
00
6010 CLS : PRINT X$
6020 PRINT AT 2,9;"DELETE AN ITE
M"
6030 PRINT ""
6040 PRINT X$
6050 PRINT AT 6,3;"SELECT ITEM B
Y ITEM NUMBER";AT 8,5;"TO RETURN
, SELECT ""0""
6060 INPUT B
6065 IF INKEY$("<") THEN GO TO 60
65
6067 IF B=0 THEN GO TO 50
6070 LET X=A
6075 LET A=B
6080 PRINT AT 8,0;"ITEM ";A,I$(A
)
6090 PRINT "QUANTITY",C$(A)
6100 PRINT "PRICE",P$(A)
6110 PRINT "MIN. STOCK",M$(A)
6120 PRINT "VENDER",V$(A)
6130 PRINT "DATE ORDERED",D$(A)
6140 LET I$(A)=""
6150 LET C$(A)=""
6160 LET P$(A)=""
6170 LET M$(A)=""
6180 LET V$(A)=""
6190 LET D$(A)=""
6191 FOR A=B TO X
6193 IF A=X THEN GO TO 6210
6194 LET I$(A)=I$(A+1)
6195 PRINT AT 16,7;"*COMPUTER WO
RKING*"TAB 8;"UPDATING ITEM ";
A
6196 LET P$(A)=P$(A+1)
6197 LET M$(A)=M$(A+1)
6198 LET V$(A)=V$(A+1)
6199 LET D$(A)=D$(A+1)
6200 LET C$(A)=C$(A+1)

```

```

6203 IF A=X THEN GO TO 6210
6205 NEXT A
6210 LET A=A-1: CLS : PRINT AT 1
6,0;"TO DELETE ANOTHER ITEM TOUC
H ANY";TAB 12;"KEY"
6220 PRINT AT 19,3;"TO REGAIN ME
NU TOUCH ""R""
6230 IF INKEY$="" THEN GO TO 623
0
6240 IF INKEY$("<") THEN GO TO 6
000
6250 GO TO 50
7000 CLS
7010 IF A<=1 THEN GO TO 50
7020 PRINT X$
7030 PRINT AT 2,1;"CHECK FOR MIN
IMUM STOCK LEVELS"
7040 PRINT
7050 PRINT X$
7060 PRINT AT 4,8;"COMPUTER WORK
ING"
7065 PRINT ""
7070 FOR B=1 TO A
7080 IF VAL C$(B)+1<=VAL M$(B) A
ND D$(B)<>"0 / / " THEN PRINT
"ITEM ";B,I$(B);"STOCK LEVEL",C$
(B);"MIN. LEVEL",M$(B),," "
7100 IF B=A-1 THEN GO TO 7140
7110 NEXT B
7140 PRINT TAB 9;"END OF FILE"
7150 PRINT ""
7160 PRINT "TO RETURN TO MENU PR
ESS ANY KEY"
7170 IF INKEY$="" THEN GO TO 717
0
7180 GO TO 50
8000 ON ERR RESET : CLS
8010 PRINT AT 10,8;"ENTER TO SAV
E"
8020 PRINT AT 13,2;"TO RETURN TO
MENU TOUCH ""R"";AT 16,7;"TO
END TOUCH ""E""
8030 IF INKEY$="" THEN GO TO 803
0
8040 IF INKEY$="E" THEN STOP
8050 IF INKEY$="R" THEN GO TO 50
8060 SAVE "INVENTORY" LINE 10

```

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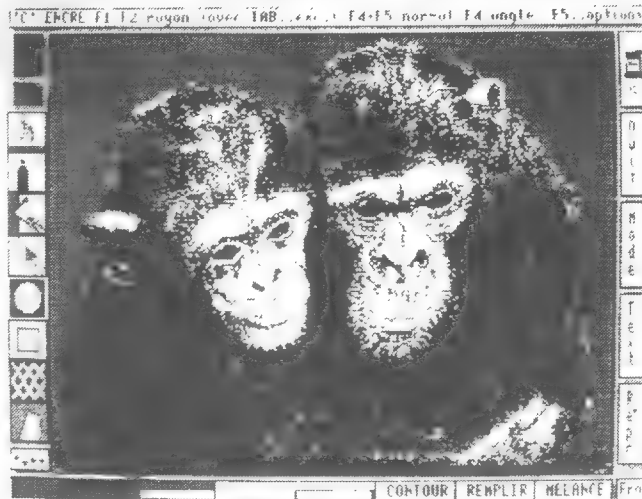
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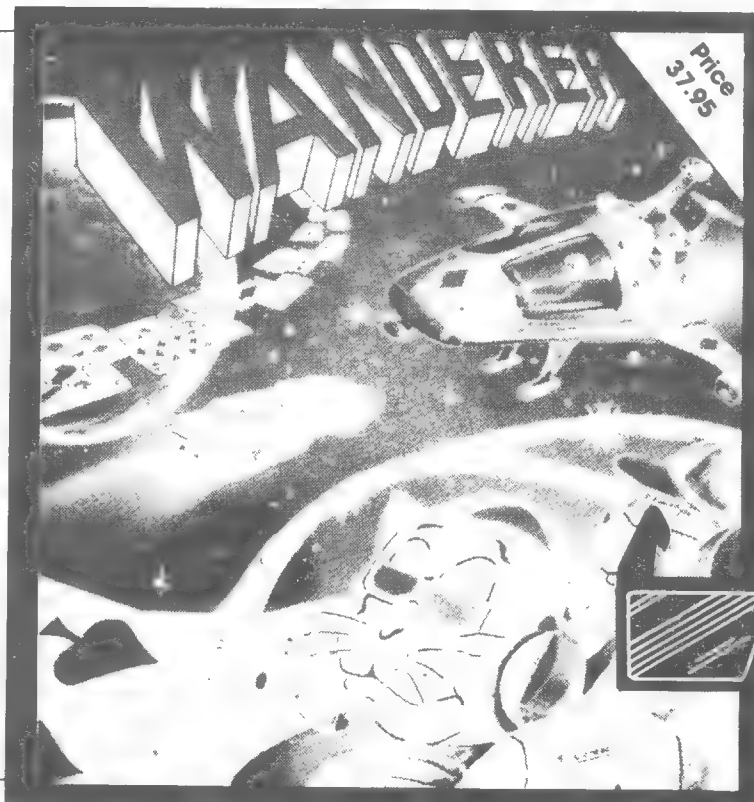


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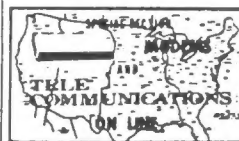


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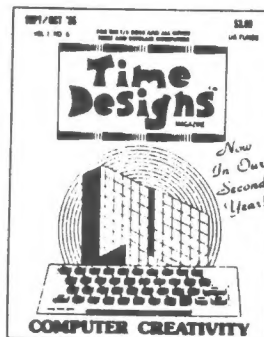
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